DOCUMENT RESUME

ED 422 910 IR 057 068

AUTHOR Dutt, James S.
TITLE An Electronic Commerce Course for Undergraduate I.S. Majors: A Review of Current EC Courses and a Course Outline.
PUB DATE 1997-00-00
NOTE 10p.; In: Proceedings of the International Academy for Information Management Annual Conference (12th, Atlanta, GA, December 12-14, 1997); see IR 057 067.
PUB TYPE Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Business; Computer Oriented Programs; Computer Uses in Education; *Course Content; Curriculum Development; Higher Education; Information Management; *Information Science Education; *Information Systems; Instructional Design; World Wide Web
IDENTIFIERS *Electronic Commerce

ABSTRACT

Although electronic commerce (EC) has been a reality for more than two decades, interest in EC has exploded within the past three years due to the increased business use of the Internet and the World Wide Web. While companies are increasingly looking for individuals with knowledge of and/or a background in EC, they are finding that most universities do not spend adequate time, particularly at the undergraduate level, on EC. This paper examines the degree to which Information Systems (IS) programs are teaching courses on EC, describes the types of EC courses being taught, and describes and presents an outline for an upper division EC course designed for undergraduate IS majors. The prototype EC course described includes a significant hands-on component giving students the opportunity to develop actual EC systems. While many of the topics may be covered in other IS courses, it is argued that an integrated approach which focuses on EC and provides students with the opportunity to conduct EC is a more appropriate way of teaching an increasingly important area of information systems. Appendices include a course outline and a list of EC courses accessible via the Web. (Author/AEF)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 422 910

AN ELECTRONIC COMMERCE COURSE FOR UNDERGRADUATE I.S. MAJORS: A REVIEW OF CURRENT EC COURSES AND A COURSE OUTLINE

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

James S. Dutt
Bloomsburg University

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
T. Case
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Although electronic commerce (EC) has been a reality for more than two decades, interest in EC has exploded within the past three years due to the increased business interest in and use of the Internet and the World Wide Web. While companies are increasingly looking for individuals with knowledge of and/or a background in EC, they are finding that most universities do not spend adequate time, particularly at the undergraduate level, on EC. This paper examines the degree to which Information Systems (IS) programs are teaching courses on electronic commerce, describes the types of EC courses being taught, and presents an outline for an upper division EC course designed for undergraduate IS majors.

INTRODUCTION

Within the past several years business interest and involvement in Electronic Commerce has exploded. This new interest in EC appears to be directly related to the commercialization of the Internet, and the development of the World Wide Web, and the increased focus on the re-engineering of basic business processes. While there are many different definitions of EC, it is agreed that EC extends beyond the boundaries of a single enterprise and relies largely upon computer to computer exchange of data (Clarke, 1997; Kalakota and Whinston 1996, Zwass 1996). EC automates the interchange of all information needed to conduct business, such as the placing and tracking of orders, the delivery of products and services, and the exchange of funds. It is a relatively new technology that relies on computing and communications services to transfer digital information between applications and is typically used to transfer information that has traditionally been transferred using paper, voice, or fax. EC has two primary benefits over the use of traditional systems: speed and accuracy. Both of these result in sizable cost savings, improved service, and improved efficiency of business and personal transactions (Bloch, Pigneur, and Segev 1996). Electronic Commerce (EC) is implemented through a combination of technologies that exchange data (like EDI, e-mail, the World Wide Web), access data (shared databases, electronic bulletin boards, the World Wide Web) and automatically capture data (bar coding, magnetic/optical character recognition).

While some debate the value of EC, and there is data which indicates that corporate America is not adopting EC as fast as projected (Hayashi 1996, Ho 1996), there is little doubt that the term EC has become a popular phrase. There are a variety of new publications, both professional and academic, devoted to Electronic Commerce. EDI World has recently been renamed EC World. Major IT firms are advertising their Electronic Commerce solutions; for example, see IBM's Web Site: http://www.ibm.com. Thus, while EC may have become the current IS buzzword, it has substance and promises to increase in importance.

From a technical standpoint, Electronic Commerce involves a variety of issues / topics

IR057068

including security, Internet based EC, privacy, communication protocols, value added networks, Intranet, electronic cash, html, Web Sites, CGI scripts, database access, Java, and EDI. Business are currently evaluating and implementing a variety of EC systems which often involve emerging technologies.

While interest in business involvement in electronic commerce is growing rapidly, many in business believe that IS programs are not equipping IS graduates, particularly undergraduates, with skills and experiences in EC. As J. Maglitta notes "... few graduates are trained in new technologies - such as telecommunications and relational databases - or even exposed to them. Even fewer are taught project management, communication, documentation and team skills. Fewer still learn about . . . new areas such as electronic commerce and business process re-engineering." (ComputerWorld: 2/19/96:82). In another recent article in the professional press, May (1997) notes that IS professionals must develop a new set of skills in order to provide leadership in developing new EC systems. May goes on to note that the evolution of net-based electronic commerce is creating new IS opportunities including: Systems Architect , Network Infrastructure Support , Web Site Developer, Webmaster, Technical Support/Help Desk, and Resident Artist/ Photographer/Post-Production Editor.

In discussions with representatives of businesses recruiting IS graduates from Bloomsburg University, IS specialists and Human Resource professionals indicate that they have found that IS graduates are generally technically well trained. The students they hire for entry level positions can program and have good analytic and design skills. However, recruiters report that their new hires often lack an understanding of business processes and how IT enables these processes. As a result, new hires rarely bring new ideas or approaches to business with them. The companies that recruit IS graduates are looking for employees who not only have technological skills, but also understand the realities of electronic commerce.

Just how accurate are the above criticisms? Are IS programs focusing on EC? Are courses being offered on electronic commerce? If so, who is the audience and what is the nature / content of these courses? Are IS programs equipping IS graduates with the skills and knowledge necessary to develop EC applications?

CURRENT STATUS OF ELECTRONIC COMMERCE COURSES

As noted above, while EC has been with us for some time, it has only recently become part of the business vocabulary. This also appears to be the case in the academic IS arena. The various IS model curricula which have been developed in the past twenty years do not deal with EC in any significant way. The latest model IS curriculum, IS'97, developed by a joint AITP, AIS, and ACM task force (Davis, et al. 1997) does not directly address EC. While the issues, technologies, etc., which are used in EC are covered in the new curriculum, IS'97 does not include a course whose focus is EC.

While the model curriculum may not include an EC course, a number of IS programs do offer courses in EC. To determine how frequently EC is being taught in IS programs, particularly at the undergraduate level, and the nature of these courses, a sample of 100 IS programs was randomly selected. Only programs which offered an undergraduate IS degree were included in the sample. The chairperson's office was contacted by phone. The chair, another faculty, or, in some cases, an administrative assistant was asked whether the department currently offered an electronic commerce course at the graduate and/or undergraduate level. If an EC course was offered, the respondent was asked to send a copy of the course syllabus. If a department did not currently course offer an EC course, they were asked if they were planning to add such a course to their curriculum.

Frequency of Electronic Commerce Courses

Detailed data were obtained from 75 of the departments contacted. The data is summarized below. Two-thirds of the departments who responded did not teach EC courses at either the graduate or undergraduate level and did not plan to add one. Many reported that they covered various aspects of EC in one or more existing courses, data communications and management information systems being the most common. Ten

departments taught an EC course at the graduate level, while three offered EC courses at both the graduate and undergraduate level. Eight departments reported that they planned to add an EC course to their curricula in the next year or two. The majority of the courses in the planning stage will be offered at the graduate level. In addition, several departments reported that an electronic commerce course was being taught but by another department, most often the marketing department.

	Number of Programs	%
Do Not Offer An EC Course	51	68%
Offer an EC Course at the Undergraduate Level Only	0	0%
Offer EC Course at Graduate Level Only	10	13%
Offer EC Course at both Graduate & Undergraduate Levels	3	4%
Plan to Add EC Course within Two Years	8	11%
EC Course Offered by Another Department	3	4%

While not a random sample, additional data on electronic commerce courses is available via the ISWorld Web site. A collection of pages is devoted to EC (URL: http://www.isworld.org/isworld/ecourse/isw34111.html). This site gives links to 22 different electronic commerce course syllabi (See Appendix I for a the course title and program). Of these, only 4 (18%) are for undergraduate courses, while the other 18 are for graduate courses, primarily offered as electives in MBA programs. While most of the courses represented here are taught by IS faculty, at least two courses are offered by marketing departments. Also, it should be noted that it appears that several of the courses were special seminars which were taught once.

The Nature (Content) of Electronic Commerce Courses

Examination of the Electronic Commerce course syllabi, both those available on line and those sent by schools that currently teach Electronic Commerce courses, indicates that there is a wide variation in the content and design of electronic commerce courses. Courses differ in terms of their target population, prerequisites, course focus, assignments and projects.

Target Population: Courses differ with respect to whom the course is being marketed. Most of the current Electronic Commerce courses are offered as an IS elective for as part of an M.B.A. Program. In a few cases, due to the prerequisites required, enrollment is essentially limited to IS majors.

Prerequisites: Since the target population of the most current Electronic Commerce courses tends to be general business students, most frequently MBA students, these courses have minimal prerequisites: an MIS course or simply the basic computer literacy course. In some cases, the only prerequisite appears to be the basic ability to use a computer and familiarity with e-mail.

Course Focus: Electronic Commerce courses also differ considerably in their content. While several have a technical focus and place considerable emphasis on Electronic Data Interchange, the majority of the courses focus on the Internet, the WWW, and the "Information Super Highway". This Internet emphasis is also evident in the titles of the courses whose syllabi can be accessed via the collection of EC syllabi can be found at the IS World NET Electronic Commerce Course page. The Internet / Web emphasis is evident from the titles of many of these courses:

- Commerce on the Information Highway
- Doing Business on the Internet
- Electronic Commerce: Business Uses of the Internet
- Electronic Commerce: Internet Technologies for Competitive Advantage
- Electronic Commerce on the Internet
- Internet for Business
- Marketing and the Internet
- Riding the Information Super Highway
- The Information Superhighway
- Use of the Internet for Business and Commerce

Assignments and Projects: Analysis of the syllabi of EC courses indicates that all have a significant hands-on component. Students are required to complete a variety of homework assignments and one or more larger projects. Examination of these assignments provides additional information on the focus and nature of the courses.

Homework Assignments: Assignments are completed by individual students. They vary widely and include:

- Create a personal home page with resume.
- Purchase an actual good or service over the Internet.
- Analyze a business Web site.
- Analyze an electronic commerce case.
- Analyze Internet utilization of a specific industry.
- Create a Web form with associated scripts.
- Conduct individual research assignments.

Projects: The nature of these projects obviously depends upon the target population. Nearly all projects were to be completed by student teams. Projects include:

- Construction of a Web page and/or Web site for a business or business unit.
- Development of an Internet Business Plan.
- Detailed analysis of a business Web presence.

Discussion: Although businesses have been engaged in forms of Electronic Commerce for nearly 30 years, interest in the subject has recently exploded due to the Web. Today businesses are utilizing the Internet and the Web to reach customers and to conduct EDI. While IS programs occasionally included a course on EDI, electronic commerce, if covered specifically, was a component of the Management Information Systems course or the data communications course. Recently, as business use of the Internet has increased and Electronic Commerce has become something of a buzzword, the number of IS departments offering courses focused on electronic commerce is increasing. Unlike many areas of IS (e.g., programming, systems analysis and design, data communications) where courses are often quite similar, EC courses vary considerably. This is not surprising given the rapidly evolving nature of EC, the diversity of audiences being targeted, and the lack of a Electronic Commerce course in past and current Model IS curricula.

There are two important findings from the analysis of the data collected via the phone survey along with examination of on-line syllabi. First, less than 30% of IS programs offer an electronic commerce course. The majority of the courses being offered are offered at the graduate level. Currently few IS programs offer an EC courses at the undergraduate level. Secondly, the majority of the EC courses currently taught focus primarily on the Internet and the Web based EC and tend to be descriptive in nature. Assignments and projects tend to have a distinct Web orientation: html, Web Page development, etc.

IS departments generally have two educational roles. The first is to educate IS majors, the second to provide IS courses for students in other disciplines. IS departments frequently teach an introductory computer course ("computer literacy"), and management information systems courses at both the undergraduate and graduate levels. Some programs offer additional elective courses for non-majors, particularly as electives in an M.B.A. Program.

The majority of EC courses currently being taught appear to be service courses, that is, they are designed for the general business student or for students minoring in IS. Most are offered as electives in M.B.A. Programs. Given the increasing importance of EC and its potential impacts on all aspects of business, it is important that we continue to design and teach EC courses for the non-IS major. However, it is my contention that such courses do not provide the detailed knowledge and experience in developing EC applications that many employers are looking for in prospective IS employees. Most of the current courses focus on the business implications of EC, not on the actual development of EC applications at the system level. An EC course designed specifically for IS majors is needed.

AN ELECTRONIC COMMERCE COURSE FOR IS MAJORS

Electronic Commerce is increasing in importance

and has the potential to significantly change the way in which companies conduct business. There is a demand for IS professionals who have knowledge and skills in the development of EC applications.

I suggest that an EC designed for upper level IS majors would make an excellent senior experience for IS students, in a way the IS equivalent of the business policies course which is part of the typical business core curriculum. EC involves understanding business processes and applying the technical knowledge and skills developed in the programming, systems analysis and design, database, and data communications courses to enhance those processes.

Information Systems is an applied rather than a theoretical discipline. Much of the learning is experiential in nature. Students learn to program by writing programs; they learn to analyze business systems by going into a business and asking questions; they learn Web page development by developing Web pages. I believe it is important that an upper level EC course has an appropriate experiential component. Students would benefit by being involved in the actual conduct of some form of electronic commerce.

To this end an outline of an elective undergraduate EC course designed for senior IS majors has been developed. A Course Syllabus is included in Appendix II. The course as currently being taught is designed for upper level IS majors and is a senior capstone experience requiring the participants to integrate the skills that they have developed in the past three years. The course has two primary goals. The first is to provide IS majors with an opportunity to learn about Electronic Commerce, the issues involved, and how it is transforming the way in which businesses interact with one another. The second goal is to provide students with the opportunity of developing EC applications. Thus, the course has a significant hands-on component which makes it quite different from the EC course offered as an elective for MBA students.

To be eligible for the class, students must have the completed the following courses: systems analysis and design, data communications, and database management. The database course can be taken simultaneously. Students enrolled in the course have at least three years of experience working in a UNIX environment, can program in both C and COBOL, and have expertise in Web page development. Many have also taken a course in Java.

The course as currently taught requires hardware and software resources. Currently we are using an IBM RISC 6000 server, Model F40, as the primary platform for the course. The server is run and maintained by the CIS students and used only in upper level IS courses. Both Oracle and DB2, Netscape's Web server software are installed on the server students

The course includes components on EDI, the Internet and the WWW, Intranets, data security, consumer oriented EC, intra- and inter-organizational EC, and organizational and societal impacts of EC.

Students are required to complete a variety of individual assignments including reviewing commercial EC software, locating additional EC papers and EC related Web sites of the Web, reviewing Web based EC applications. Teams of students have also been formed and been assigned specific projects. For example, to develop a firewall for the server, to develop a Web interface to a DB2 application. In the next iteration of the course, we would like to have teams of students at several different Universities develop virtual businesses and conduct business with each other using EDI. We are also exploring the possibility having students in this course develop prototypes for a new university scheduling system.

The text for the course is Frontiers of Electronic Commerce, by Ravi Kalakota and Andrew Whinston; Addison Wesley, 1996. The material in the text is supplemented by a variety of on-line material. There is an extensive amount of information and resources on EC available on the Web.

Student reaction to the course has been extremely positive. Members of the College of Business Advisor Board and visiting IS professionals have been very complimentary and supportive. The course is currently being taught as an experimental course, but we plan to submit it to the university curriculum committee as a new IS course. We believe that the course will be an important addition to our curriculum and is an appropriate senior level IS elective.

SUMMARY AND CONCLUSIONS

Interest of businesses in EC is increasing rapidly. There is a feeling among some IS professionals that IS programs do not prepare graduates with skills in Electronic Commerce. A survey of IS programs indicate that few programs offer EC courses expressly designed for IS majors. The large majority of EC courses are offered as electives in M.B.A. programs. These course focus on the business impact of EC not on the development of EC applications.

IS is a professional discipline, and while IS programs vary considerably, a central component to their missions is to prepare undergraduate majors for challenging, rewarding careers in Information Systems. Providing students with the opportunity to develop EC skills will increase their career opportunities.

Curriculum development is a complex task, particularly in a rapidly evolving field such as information systems. There is always the danger that a course developed in reaction to an industry need will become obsolete in several years as technology changes. How responsive should IS programs be to industry needs? For example, an examination of position openings found in major metropolitan area newspapers (New York, Boston, Washington, Philadelphia, etc.) suggests that there is a shortage of IS professionals with knowledge of and experience with S.A.P. Should IS programs develop courses which focus on S.A.P. And enable students to learn how to work with S.A.P. Applications. Such training would certainly help meet this need? It is my belief that most IS educators would argue against developing a course focused on S.A.P., particularly at the undergraduate level.

Is EC all that different? Is this not simply a response to an industry need? Unlike S.A.P. which after all is a commercial organization which develops corporate level software applications, Electronic Commerce refers to the automation of business processes which connect businesses with one another. The emphasis is on commerce and how IT can be used to improve existing processes or develop new ones.

The prototype EC course for IS students described above includes a significant hands-on component giving students the opportunity to develop actual EC system. While many of the topics may be covered in other IS courses, it is argued that an integrated approach which focuses on EC and provides students with the opportunity to conduct EC is a more appropriate way of teaching an increasingly important area of information systems.

REFERENCES

Bloch, M., Y. Pigneur, and A. Segev. "Leveraging Electronic Commerce for Competitive Advantage: A Business Value Framework". *Proceedings of the Ninth International Conference on EDI-IOS.* Bled Slovenia. June, 1996.

Clarke, Roger. Electronic Commerce Definitions. http://www.brint.com/Elecomm.htm. Version of 11 August 1997.

Davis, G. B., J. T. Gorgone, J. D. Couger, D. L. Feinstein, and H. E. Longenecker, Jr. IS'97: Model Curriculum and Guidelines for Undergraduate Degree Programs in Information Systems. Unpublished Manuscript. 1996.

Hayaski, A.M. "Is corporate America ready for e-commerce?" *Datamation*, October, 1996.

Ho, J. K. "Evaluating the World Wide Web: A Global Study of Commercial Sites," *Journal of Computer Mediated Communication*, Vol. 3(1), June 1997.

May, T. A. Electronic Commerce: 3 Truths for IS. *ComputerWorld*, April 21, 1997.

Kalakota, R.and A. Whinston. *Frontiers of Electronic Commerce*. Addison Wesley, 1996.

Phelan, S. E. "Internet Marketing: Is the Emphasis Misplaced" Paper presented at the Annual Meeting of Australian and New Zealand Academy of Management, 1966.

Zwass, V. "Electronic Commerce: Structure and Issues, " *International Journal of Electronic Commerce*, vol. 1 (1), pp 3-23, Fall 1996.

APPENDIX I

ELECTRONIC COMMERCE
A COURSE FOR IS MAJORS

Description:

This course provides a detailed examination of electronic commerce. Students study various forms of electronic commerce: EDI, Internet and Web applications. Emphasis is on the actual development and implementation of electronic commerce applications.

Goals/Objectives:

1. To develop a detailed understanding of EC and its implementation
2. To become familiar with how EC is changing standard business processes..
3. To develop a working knowledge of Electronic Data Interchange and EDI software.
4. To become knowledgable on securing a Web site.
5. To develop a skill in writing CGI scripts.
6. To examine various EC issues: marketing on the Internet, legal ramifications of electronic transactions, etc.

Audience:

Senior IS and CS students or the permission of the instructor.

Prerequisites:

Data Communication, Programming (C++ or Java), Data Base Management, Operating Systems, html and Internet Knowledge

Assignments:

Students will be required to gather data and submit reports on a specific commercial electronic commerce software product. Students will interface a html form with a database using a cgi script.

Course Project:

An important element of the course is an actual EC experience. Students form a virtual business and conduct electronic commerce with other virtual businesses at other universities.

Topical Outline:

Electronic Commerce
Overview
History and Evolution
Applications and Examples

Telecommunication Issues
Network Infrastructure
Value Added Networks

The Internet and the WWW
Evolution of Internet
Impact of Web
Internet commercialization
Internet Protocol Suite

Multicast IP
IP Future
Intranets
CGI Scripts

Secure Electronic Commerce
Client-Server Network Security
Firewalls
Data Encryption
Government Regulations

Electronic Data Interchange
Definition and evolution
Standards
Legal Issues
Commercial EDI applications

Electronic Payment Systems
Electronic Funds Transfer
Types of Payment Systems
Designing Electronic Payment Systems

Types of Electronic Commerce
Consumer-oriented EC
Intra-organizational EC
Inter-organizational EC

Electronic Documents
Digital Libraries

Impacts of EC
Organizational
Societal

Text:

Kalakota, R.and A. Whinston. Frontiers of Electronic Commerce. Addison Wesley, 1996.

Additonal course materials are avaliable on-line.

APPENDIX II

ELECTRONIC COMMERCE COURSES ACCESSIBLE VIA THE WEB SOURCE: ISWORLD NET

International Electronic Commerce - American University, Prof. Erran Carmel, Kogod College of Business Administration, Spring 1997. Graduate Course, MBA elective

Electronic Commerce - University of Louisville, Prof. Brian L. Dos Santos, College of Business & Public Administration, Spring 1997. Graduate Course

Doing Business on the Internet - Harvard University, Lisa R. Klein, Harvard Extension School, Spring 1997. Grad course

Marketing and the Internet - University of Delaware, Alex L. Brown, College of Business & Economics, Spring 1997. Marketing course

Electronic Commerce: Business for the 21st Century - New York University, Prof. Ajit Kambil, The Leonard N. Stern School of Business, Spring 1997. Graduate Course

The Information Superhighway - Boston University, C. Suzanne Iacono, School of Management, Spring 1997. Graduate course

Electronic Commerce - DePaul University, Chicago, Illinois, Dr. Sasa Dekleva, Kellstadt Graduate School of Business, Fall 1996. Graduate course

Computers and Modern Organizations - University of California at Berkeley, Berkeley, California, Dr. Malu Roldan, Haas School of Business, Fall 1996.

Internet for Business - David N. Myers College, Cleveland, Ohio, D. Trivison and R. Brhel, Fall 1996. Undergraduate course

Use of the Internet for Business and Commerce - Nanyang Technological University, Singapore, Dr. Gabriel Goren & Dr. Jon D. Kendall, Nanyang Business School, Summer/Fall 1996.

Using IT in a global economy - BI Stiftelsen Norwegian School of Management, Prof. Espen Andersen, 1996. Graduate course

Organisational Implications of Information Systems: Electronic Commerce - University College Dublin, Professor Blake Ives, Michael Smurfit Graduate School of Business, Spring 1996.

Commerce on the Information Highway -University of Pittsburgh, Professor Dennis Galletta, Katz Graduate School of Business, Summer 1995.

Managing Electronic Commerce - University of Rochester, Ravi Kalakota, MBA CIS course, Winter 1996.

Electronic Commerce on the Internet - University of Michigan, George Widmeyer, seven week MBA course, Fall 1995 and Spring 1996.

Electronic Commerce: Business Uses of the Internet - University of Illinois at Springfield, Rassule Hadidi, Fall 1995. This course is designed for the School of Business and Management graduate students.

Information Technology in Marketing - Columbia Business School, Rajeev Kohli, 1995.

Managing in the Marketspace - Harvard Business School, John Sviokla, 20 session graduate MBA course, Spring 1995.

Marketing and the Internet - Fuqua School of Business, Duke University, John M. McCann and John Gallagher, an elective course in the MBA program, Spring 1995.

Electronic Commerce: Internet Technologies for Competitive Advantage - Bowling Green State University, Simha Magal, Fall 1996. Senior level undergraduate MIS Class.

Riding the Information Super Highway - California State University at San Marcos, David Jankowski, Spring 1996. Undergraduate Course for all majors. Computer Literacy only prerequisite. Study of the Information Superhighway with an emphasis on hands-on usage of the Internet, and the personal, business, technical, and social implications of the Superhighway.

Electronic Commerce - Southern Methodist University, Blake Ives, Spring 1995. Experimental Undergraduate Honor's course. Internet / WWW focus